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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/625,801 | 07/23/2003 | Anthony C. Zuppero | 22122878-70 | 9026 |

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| EXAMINER | |
|---|---|
| DIAMOND, ALAN D | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1753 | |

DATE MAILED: 06/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/625,801 | ZUPPERO ET AL. | |
| | Examiner | Art Unit | |
| | Alan Diamond | 1753 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *23 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *32-92* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *32-92* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *07232003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

## DETAILED ACTION

### *Priority*

1. In the continuity data in the first paragraph on page 1 of the specification, the two occurrences of the term "That application" (see lines 2 and 4 of the paragraph) should be changed to "U.S. Patent Application No. 10/142,684" so as to avoid any confusion as to the continuity.

2. At line 1 of said first paragraph on page 1 of the specification, the term "filed May 10, 2002, now U.S. Patent No. 6,649,823" should be inserted after "10/142,684.

3. At line 5 of said first paragraph on page 1 of the specification, the term "now U.S. Patent No. 6,700,056" should be inserted after "October 24, 2001".

### *Claim Objections*

4. Claim 46 is objected to because of the following informalities: In claim 46, at line 2, the term "semiconuctodiode" should be changed to "semiconductor diode". Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 33, 36-38, 42, 51, 55, 78, 80, 90, and 91 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the

inventor(s), at the time the application was filed, had possession of the claimed invention.

In claim 33, the "tailoring one or more properties of the semiconductor diode to enhance one-way transport of the electrons in the thin electrically conducting surface to the one or more semiconductor elements" is not supported by the specification, as originally filed.

In claims 36-38, the doping range using $10^{15}$ and $10^{18}$ per cubic centimeter as the lower and upper limits is not supported by the specification, as originally filed

In claim 42, at line 2, the "approximately match" is not supported by the specification, as originally filed.

In claim 51, a cross-section that is "circular, elliptical, square, rectangular, tubular, multi-tubular, truncated cone, wrinkled non-uniform structure, tapered cone, or aerodynamic cross section such as a Jokowski profile" is not supported by the specification, as originally filed.

In claim 55, at line 2, the term "approximately a stoichiometric mixture" is not supported by the specification, as originally filed.

In claim 78, at line 2, the term "substantially flat" is not supported by the specification, as originally filed.

In claim 80, at line 2, the term "substantially stepped" is not supported by the specification, as originally filed.

In claim 90, the powering of one or more microwave transmitters is not supported by the specification, as originally filed. The same applies to dependent claim 91.

In claim 91, the "phase locking emitted from the one or more microwave transmitters" is not supported by the specification, as originally filed.

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> **The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.**

8. Claims 36-38, 51, 78, and 80 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

At line 2 in each of claims 36-38, it is not clear exactly what range is encompassed by the term "whose doping range is $10^{15}$ and $10^{18}$ per cubic centimeter." An example of a range would be "whose doping range is from $10^{15}$ to $10^{18}$ per cubic centimeter."

Claim 51 is indefinite because the term "such as a Jokowski profile" sets forth a range within a range. The meets and bounds for the claim cannot be determined.

In claim 78, at line 2, the term "substantially flat" is indefinite because it is subjective.

In claim 80, at line 2, the term "substantially stepped" is indefinite because it is subjective.

***Double Patenting***

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA

1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claims 32-92 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-16 of U.S. Patent No. 6,114,620. Although the conflicting claims are not identical, they are not patentably distinct from each other because the method and device in the claims of said patent perform the instant method.

11. Claims 32-92 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,218,608. Although the conflicting claims are not identical, they are not patentably distinct from each other because the method in the claims of said patent performs the instant method.

12. Claims 32-92 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 6,222,116. Although the conflicting claims are not identical, they are not patentably distinct from each other because when preparing and using the device in the claims of said patent, the instant method will be performed.

13. Claims 32-92 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-74 of U.S. Patent No.

6,268,560. Although the conflicting claims are not identical, they are not patentably distinct from each other because the method and device in the claims of said patent perform the instant method.

14. Claims 32-92 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10 of U.S. Patent No. 6,327,859. Although the conflicting claims are not identical, they are not patentably distinct from each other because the method and device in the claims of said patent perform the instant method.

15. Claims 32-92 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-37 of U.S. Patent No. 6,649,823. Although the conflicting claims are not identical, they are not patentably distinct from each other because the method and device in the claims of said patent perform the instant method.

16. Claims 32-92 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9 of U.S. Patent No. 6,678,305. Although the conflicting claims are not identical, they are not patentably distinct from each other because the method in the claims of said patent performs the instant method.

17. Claims 32-92 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9 of U.S. Patent No. 6,700,056. Although the conflicting claims are not identical, they are not patentably

distinct from each other because the method in the claims of said patent performs the instant method.

18. Claims 32-92 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-46 of copending Application No. 09/682,363. Although the conflicting claims are not identical, they are not patentably distinct from each other because the method and device in the claims of said copending application perform the instant method.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

19. Claims 32-92 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-29 of copending Application No. 10/052,004. Although the conflicting claims are not identical, they are not patentably distinct from each other because the method and device in the claims of said copending application perform the instant method.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

20. Claims 32-92 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-30 of copending Application No. 10/185,086. Although the conflicting claims are not identical, they are not patentably distinct from each other because the method and device in the claims of said copending application perform the instant method.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

21. Claims 32-92 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 and 34-73 of copending Application No. 10/218,706. Although the conflicting claims are not identical, they are not patentably distinct from each other because the method in the claims of said copending application performs the instant method.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Conclusion***

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patents 4,045,359, 4,407,705, 5,593,509 and 5,641,585, and U.S. Patent Application Publication 2001/0018923 are hereby made of record.

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Diamond whose telephone number is 571-272-1338. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alan Diamond
Primary Examiner
Art Unit 1753

Alan Diamond
June 1, 2004